

THE MAGNAVOX COMPANY, et al.,

Plaintiff,

vs.

CHICAGO DYNAMIC INDUSTRIES et al.,

Defendants

No. 74 C 1030

and

74 C 2510

Before the Honorable JOHN F. GRADY,
Judge

Thursday, December 30, 1976

2:20 p.m.

Parties met pursuant to recess.

PRESENT:

FILED

MR. ANDERSON

MR. WILLIAMS

MR. ALLEGRETTI

MR. BRIODY

MAR 2 - 1977

H. Stuart Cunningham, Clerk
United States District Court

appeared for The Magnavox Company;

MR. GOLDENBERG

MR. RIFKIN

appeared for the Seeburg defendants
and World Wide Distributors.

ALSO PRESENT:

MR. GEORGE R. PETTIT

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THE CLERK: Case on trial.

THE COURT: Good afternoon, gentlemen.

MR. ANDERSON: Your Honor, just prior to going to lunch, Mr. Goldenberg advised me that, I gather within the last day or so, the defendant discovered a circuit diagram of the game TV Hockey, made by Amutronics and sold by one of the defendants, and therefore this is one of the games where we only had descriptive literature and the stipulation, and we would add Plaintiff's Exhibit 52-A, which is the TV Hockey circuit diagram.

THE COURT: All right.

WILLIAM BENNETT RIBBENS,
called as a witness by the plaintiff herein, having been previously duly sworn, was examined and testified further as follows:

DIRECT EXAMINATION (Resumed)

BY MR. ANDERSON:

Q Dr. Ribbens, have you looked at Plaintiff's Exhibit 52-A, the circuit diagram of TV Hockey?

A Yes. Briefly.

Q Does that change your testimony about classifying TV Hockey in Group B?

A No, it doesn't.

Q Dr. Ribbens, just before lunch I was about

to read to you various elements of certain claims of the Reissue Patent 28,598, which is one of the two patents in suit.

I would ask you to step down, if you will, and state, if you can, whether you find the elements in the accused game Pro Tennis, as it is disclosed in various exhibits, including Plaintiff's Exhibit 91-B?

I will read to you first from claim 6 of Patent 28,598.

Do you find in Pro Tennis apparatus for generating symbols on the screen of a television receiver to be manipulated by at least one participant?

A Yes, I do.

Q Do you find a means for generating a "hitting" symbol?

A A hit symbol is indicated on Exhibit 91-B by the region enclosed by the solid orange.

Q I am reading from claim 6 and I misread the first line I read a hit symbol. If I take them in order and I will do that, claim 6 of the '759 patent in column 24. The first element listed in the claim, Dr. Ribbens, is means for generating a hitting symbol. Do you find means for generating the hitting symbol in the game Pro Tennis?

A Yes, the hitting symbol is outlined by the solid purple line.

Q Do you find means for generating a movable hit symbol?

A That is the portion of the circuit diagram outlined by the solid orange line. There are two such regions: One near the bottom and one near the top. They are both labeled "Movable Hit Symbol".

Q In the game Pro Tennis as shown in Exhibit 91-B, do you find means for generating a fixed hit symbol?

A Yes, the portion at the upper right which is enclosed in the solid green line.

Q Now, what are the actual physical fixed hit symbols that are seen on the screen in Pro Tennis?

A In Pro Tennis a pair of lines would be drawn near the top of the screen and near the bottom of the screen, and they are referred to in Exhibit 91-B as top and bottom lines.

Q In the game Pro Tennis as shown in the exhibits, do you find means for denoting coincidence between the moving hit symbol and the fixed hit symbol?

A Yes. At the lower left of Exhibit 91-B is a region outlined in green and is labeled "Movable Hit/Fixed Hit Coincidence."

Q In the Pro Tennis game, do you find means for causing the movable hit symbol to move away from the fixed hit symbol when coincident therewith.

A Yes, there is a portion of the diagram outlined in pink and labeled "Movable Hit Symbol Move Away".

Q In the Pro Tennis game, do you find means for coupling said means for generating symbols to the video circuits of a television receiver?

A Yes, the components outlined in solid brown labeled "Display". There are two such regions, one near the center and one near the upper right.

Q I would like to ask you whether or not you find the elements of claim 2 in the accused Pro Tennis game as shown in the exhibits. Do you find in combination with a standard television receiver apparatus for generating symbols upon the screen of the receiver to be manipulated by at least one participant?

A Yes.

Q Do you find means for generating a hitting

symbol?

A The region outlined in solid purple on Exhibit 91-B.

Q Do you find means for generating a movable hit symbol?

A The portion of Exhibit 91-B outlined in solid orange.

Q Do you find means for generating a fixed hit symbol?

A The portion of the exhibit outlined in the solid green line.

Q Do you find means for denoting coincidence between said movable hit symbol and said fixed hit symbol?

A The lower left portion of Exhibit 91-B outlined in green and labeled "Movable Hit/Fixed Hit Coincidence."

Q And do you find means for causing the movable hit symbol to move away from the fixed hit symbol when coincident therewith?

A Yes, the portion of the diagram which is outlined in the solid pink line labeled "Movable Hit Symbol Move Away."

Q Do you find in the accused Pro Tennis game means for displaying such symbols?

A Yes. The components which are enclosed by

the solid brown lines are two such regions labeled Display.

Q And do those components actually display the symbols or is there more involved in the game Pro Tennis than those two elements that you have indicated?

A Well, these are components which connect the symbol generating means to the output which is connected to the television.

Q And did you find a television receiver in the Pro Tennis game?

A It is not depicted on Exhibit 91-B. However, the connection to the television receiver is labeled "Picture" and there is a small square with a 5 inscribed in it. That is the point at which this circuit would be connected to the television receiver.

Q And when you say the television receiver, is that a receiver such as the Zenith receiver in Exhibit 43-E?

A Yes.

Q I would like to read to you from claim 13 of the Reissue Patent 28,598 -- and your Honor, claims 13 and 14, which I will go through, are reissue claims appearing in the reissue patent, and not in the original patent.

MR. GOLDENBERG: Your Honor, there is the same problem with respect --

THE COURT: All right. I will receive it subject to the same reservations.

MR. GOLDENBERG: Thank you, your Honor.

BY MR. ANDERSON:

Q Dr. Ribbens, do you find in the Pro Tennis game apparatus for playing games by displaying and manipulating symbols on the screen of a cathode ray tube?

A Yes, I do.

Q Do you find in Pro Tennis means for generating vertical and horizontal synchronization symbols?

A Yes, I do. The upper portion of Exhibit 91-B schematic from the upper left corner to nearly the upper right. These components are capable of generating the horizontal and vertical sync.

Q Do you find in Pro Tennis means responsive to said synchronization signals for deflecting the beam of the cathode ray tube to generate a raster on the screen?

A Yes. The horizontal and vertical synchronizing signals are combined and connected to the output and these are delivered to the television receiver and will cause the television receiver to display a raster.

Q In Pro Tennis do you find means coupled to said synchronization signal generating means and the cathode ray tube for generating a first symbol on the screen which is movable?

A Yes, the portion which is outlined with the solid purple labeled -- hold it -- which is what did you say?

Q Which is movable.

A Oh, which is movable? That is the portion of the block diagram enclosed in the solid orange line labeled "Movable Hit Symbol".

Q Do you find in Pro Tennis means coupled to the synchronization signal generating means and the cathode ray tube means for generating a second symbol on a screen in a predetermined fixed position depending on the game to be played?

A Yes, the portion of the diagram enclosed by a solid green line labeled "Fixed Hit Symbol" on Exhibit 91-B.

Q In Pro Tennis, do you find means coupled to the first symbol generating means and to the second symbol generating means for determining a first coincidence between the first symbol and the second symbol?

A Yes. The portion at the lower left enclosed in the solid green line labeled "Movable Hit/Fixed Hit Coincidence."

Q And in Pro Tennis do you find means coupled to the first coincidence determining means and the first symbol generating means for altering the motion of the first symbol in response to the coincidence?

A Yes. The portion of the diagram enclosed by the solid pink line labeled "Movable Hit Symbol Move Away."

MR. ANDERSON: Your Honor, that completes the various elements of claim 13.

Claim 14 is dependent upon claim 13, and I will go through the elements of claim 14 with Dr. Ribbens.

BY MR. ANDERSON:

Q Dr. Ribbens, do you find means coupled to said synchronization signal generating means and said cathode ray tube for generating a third symbol on said screen at a position which is directly controlled by a player?

A Yes. The portion of the diagram enclosed,

included by the solid purple line, labeled "Hitting Symbol."

Q Do you find means coupled to said third symbol generating means and said first symbol generating means for determining a second coincidence between said third symbol and said first symbol?

A Yes. The portion of the diagram enclosed by the dashed orange line which is labeled "Movable Hit/Hitting Coincidence".

Q Do you find in the Pro Tennis means coupled to said second coincidence determining means and said first symbol generating means for imparting a distinct motion to said first symbol in response to said second coincidence?

A Yes. A portion of the circuit included by a dashed or orange line labeled "Movable Hit Symbol." There are three such regions, one in the top "Movable Hit Symbol" block, and two in the lower "Movable Hit Symbol" block labeled "Impart Distinct Motion (Horizontal)" and "Impart Distinct Motion (Vertical)".

Q In the agreed statement of facts plaintiffs have in paragraph 29 listed with respect to Group B various claims of the original patents '284 and '285 and the Reissue Patents '507 and '598, which have been asserted against the Group B claims.

Have you considered each of those claims in the various elements in the manner I have asked you about claims 6 to 13 and 14?

A Yes.

Q Have you found correspondence in those other claims in a similar way?

A Yes, I have.

Q I would show you paragraph 28, a list of Group B games, which are contained in the agreed state-

ment of facts at page 9, and I ask you to look over that list of Group B claims and state how the claims apply to the other games in Group B relative to your application of the claims to Pro Tennis?

A There was the same correspondence between groups of components of the other games and the claims of '507 and '598 and in particular '598 was applied to this group of games.

Q Dr. Ribbens, at the present time there is just one game in Group C, the game TV Goalie. Have you considered the circuit diagram and other documents relating to the game TV Goalie made by Chicago Dynamics?

A Yes.

Q In what respect does TV Goalie differ from the games in either Group A or Group B that cause Group C to be created, if you know?

A Well, one difference, at least, was that the hitting symbol can move both vertically and horizontally on the display.

Q Have you considered the application of the various claim elements in the manner that I have read them to you as they would apply to TV Goalie?

A Yes, I have.

Q And how would those various claim elements apply to the game TV Goalie?

A In the same way. I found groups of components to which I could reference the claims.

Q And with respect to which of the two patents have you found that to be true?

A In Group C, '598, I believe. I would have to stop and think about that for a moment.

Can I look at the circuit diagram?

Q I hand you Plaintiffs' Exhibit 38-A, the circuit diagram of TV Goalie.

A Yes. This would be the same as the claims of '598.

Q Would this correspond to either the claims as

you have applied them in Group A or Group B?

A Group B.

Q Group B?

A Right.

Q Would that include the application, then, of both '507 and '598 claims?

A Yes.

Q Dr. Ribbens, in the agreed statement of facts there is a classification by plaintiff, Group D, which now includes only the game TV Pin Game. Are you familiar with and have you considered the documents relating to TV Pin Game?

A Yes, I have.

Q How does TV Pin Game differ from the games in Group A and Group B?

A TV Pin Game has a single player control symbol which is movable, and a ball, and simulates a pinball game.

Q Does it have fixed hit symbols?

A It has fixed hit symbols.

Q With respect to the claims of '507 and the '598 patent, have you considered the applicability of the various claim elements to TV Pin Game?

A Yes, I have.

Q And relative to your testimony regarding Group A and Group B, how did the claims of '507 and '598 relate to the game TV Pin Game?

A I found components in TV Pin Game which related to the claims which have been recited in '598 in particular.

Q And have you found the claims of '507 applicable to TV Pin Game also?

A Yes.

Q Have you considered the exhibits relating to the game Super Flipper?

A Yes, I have.

Q And can you just briefly state why Super Flipper was placed in a separate group E, apart from the other games?

A I believe the orientation of the display was different. There are, if I remember, four movable hitting symbols which are player manipulable.

Q When you say the orientation of the --

A Display tube.

Q -- what do you mean?

A It rotated 90 degrees relative to the TV Pin Game display.

Q So that what is normally considered the horizontal sweep became actually --

Ribbens - direct

A Vertical axis of display.

Q -- a vertical axis of display?

A That's correct.

Q Have you considered whether the claim elements of the '507 claims and the '598 claims that you have been testifying about can be found in the game Super Flipper?

A Yes, they can.

Q What ones of the claim elements that I have asked you about in '507 and '598 patents are found in Super Flipper?

A Hitting symbol generator and movable hit generator as described in both '507 and '598, and I find a fixed hit symbol called "Bumpers" in the actual schematic of the game which pertains to the fixed hit symbol of '598.

Q And with respect to coincidence displays and changing directions --

A I have found elements of the circuit diagram of both TV Pin Game and Super Flipper in which coincidence between the movable hit symbol and the hitting symbol is determined, and the motion of the movable hit symbol is altered.

Furthermore, I found circuitry which can detect coincidence between the movable hit symbol and the fixed hit symbol and which can alter the motion of the movable hit symbol.

THE COURT: Going back for just a minute to Group C, which involved a hitting symbol which could move both vertically and horizontally --

THE WITNESS: That's correct.

THE COURT: -- in these games that you played this morning, were your hitting symbols stationary

vertically?

THE WITNESS: They moved in a vertical -- along a vertical line. The player did not change the horizontal position of the hitting symbols, that's correct.

THE COURT: In other words, you could not move your hitting symbol up or down?

THE WITNESS: Yes, you could move it up and down, but not laterally.

THE COURT: But not laterally?

THE WITNESS: Right, whereas in TV Goalie --

THE COURT: You can move it laterally?

THE WITNESS: -- you can move it laterally.

BY MR. ANDERSON:

Q And, Dr. Ribbens, in the Odyssey games, how are the hitting symbols movable?

A They were movable either horizontally or vertically or both. You need only control, player control, to the input corresponding to -- I think this isn't a good diagram to use for that -- the other one shows both input --

Q Perhaps use them both, Doctor, and explain the difference.

A Well, it's just that it's explicitly shown on Exhibit 90 that there are a pair of inputs to each

of the symbol generators, and in the example shown, in which the player controllable symbols move only vertically, the horizontal control signal is fixed. It would only be necessary to provide a variable input under player control to this input, that is, the input labeled e_1 on dot 1 corresponding to e_2 on dot 2, and the horizontal motion does exist on the three generators, so it would be possible to give horizontal motion on Dot 1 and 2 by varying the control at e_1 and e_2 .

THE COURT: That would depend not so much on making the circuitry more complex, but just on how difficult you want to make the game?

THE WITNESS: Well, you would add circuitry similar to that which is shown here that is labeled 123.

MR. ANDERSON: What is the answer to the Court's question, Dr. Ribbens?

THE WITNESS: I'm sorry, I thought I answered it.

THE COURT: Well, whether one would employ that option in constructing the game would have more to do with whether you wanted to make the game more difficult and versatile --

THE WITNESS: That's correct.

THE COURT: -- rather than whether you wanted

to make the circuitry substantially more complex?

THE WITNESS: That's correct, that's correct.

BY MR. ANDERSON:

Q Dr. Ribbens, I think that completes the discussion of the chart. You can resume the stand.

A Thank you.

Q Dr. Ribbens, have you considered the various items listed and described in the defendants' notice of prior art pursuant to 35 USC 282? And I would like to hand you a copy so that you can look it over.

A Yes, I have.

Q I would like you also to look at the prior art, or what is called "References Cited" at the beginning of the Reissue Patent 28,507, as well as the list of related patents and patent applications for that column 1, lines 10 to 15, of the Reissue Patent 28,507, and state whether or not you have considered the references cited and the art listed at the beginning of column 1 of the '507 patent?

A Yes, I have.

Ribbens - direct

MR. GOLDENBERG: Your Honor, it might be helpful to the Court to have the prior art patents, which are compiled in Defendants' Exhibit 9. I don't know whether the Court has a copy of that.

THE COURT: Yes.

MR. GOLDENBERG: Here is a second copy.

THE COURT: I only need one.

MR. GOLDENBERG: Something was said about two in case you wanted to make marks on it, or something like that.

THE COURT: Oh. Well, I don't think so. If I do make any marks, then -- well, no. I don't think I will.

MR. GOLDENBERG: Mr. Anderson, is the witness going to talk about the other prior art at this time?

MR. ANDERSON: What other prior art?

MR. GOLDENBERG: All the prior art in the notice. If so, it might be convenient to give the Court the evidence with respect to the other prior art.

MR. ANDERSON: I was going to ask the witness only about the patent prior art that you have listed under U. S. patents.

The publications relating to Michigan Pool and Space War and the public knowledge insofar as

it is reflected in the publications and documents relating to the video game entitled Space War and the video game of Pool from the Ann Arbor event.

MR. GOLDENBERG: I leave it up to the Court. We have binders with respect to those various things.

THE COURT: I was wondering as I was listening to you whether this might better be left to cross examination. On the other hand, I am thinking also that it wouldn't hurt me to hear it twice.

MR. ANDERSON: Your Honor, I am going to ask only the conclusions and leave to Mr. Goldenberg, if he wishes, the cross examination.

THE COURT: Go ahead and do it that way.

BY MR. ANDERSON:

Q Dr. Ribbens, I would like you to turn to the Reissue Patent 28,598, and look at the lists of references under the heading "References Cited" on the first page, and also note the listing of the patent applications which resulted in the '480 Baer patent and the application serial No. 828,154, both listed at column 1, lines 10 to 15 of the Reissue Patent 28,598.

A Yes.

MR. GOLDENBERG: I lost track of that. Could the question be read back?

Ribbens - direct

THE COURT: Read it back.

(The record was read by the reporter as requested.)

BY MR. ANDERSON:

Q Dr. Ribbens, have you had an opportunity in preparing to testify to look at the references cited in the '598 patent at the beginning, plus the application which resulted in -- I should say in the '480 patent which matured from the two applications listed in column 1 of the '598 patent and, of course, the disclosure of the '507 patent and its parent Patent '284, which is recited in the '598 patent as serial No. 828,154.

A Yes.

Q Are you familiar with all of that material?

A Yes, I am.

Q With respect to the '507 patent and the art referred to in it, as well as the art referred to in the defendants' notice pursuant to '282, as I listed it in the record, can you state what relationship there is between that listed art in the patent and in the notice pursuant to '282 and the inventions of the '284 and Reissue '507 patents as you described them yesterday for the Court?

A I think I lost your question a little bit. Let me try to paraphrase and see if that is correct.

Q I would like you to --

A Go ahead.

Q -- tell me -- I'm sorry. You say you feel you can paraphrase it?

A I'm not sure.

Q Go ahead.

A I am not sure I followed it, but I can state that I have studied the references cited on '507. I have studied the prior art as listed by the defendants' document, and I found no teachings in there which I would conclude would teach the interactive play of a game using a TV receiver, as taught by '507, in particular embodying the use of synchronizing pulses and timed information for displaying symbols, which would permit interactive play between one or more players on a television set.

Q With respect to Patent 28,598 and the art cited and listed in that patent and the art cited by the defendants, can you state what relationship, if any, you find there?

A Same answer. I found nothing in either of those groups of references or prior art statements from the defense that I believe teaches interactive play with players on a television set utilizing synchronizing information for determining the position of symbols and

in which a fixed visible barrier is also displayed from which the movable hit symbol can bounce.

Q Dr. Ribbens, what is the relationship that you perceive between on the one hand the prior art and references and prior applications listed in the two patents, '507 and '598, and, on the other hand, the art listed by the defendants under the provisions of Rule 35 U.S.C. 282, noting, of course, that with respect to the '480 patent there is a duplication there, that is, in both the prior art?

A Well, with that exception I found the prior art listed by the defense in this document no more relevant as prior art than that listed by the Examiner, and which are the references cited on the two patents in suit.

Q Dr. Ribbens, have you ever testified in a patent infringement action before?

A Never.

MR. ANDERSON: Your Honor, that completes the direct examination.

THE COURT: All right.

Mr. Goldenberg?

CROSS-EXAMINATION

BY MR. GOLDENBERG:

Q Dr. Ribbens, do you recall a question by Judge Grady about the importance of english to the subject matter of either the '507 or '598 patents?

A Vaguely. I can't remember the exact wording, but I remember discussing it, yes.

Q I will tell you what. Let me read it to you. This is on page 691:

"THE COURT: I got the impression that that was an important part of the game (and this has reference to english). I gather you don't feel it is a particularly intricate part of the game relatively speaking.

"THE WITNESS: No. Nor is it fundamental to the teaching. It is an example."

Do you recall that? You may want to read the balance of your answer.

A No. I am perfectly willing to believe what you said.

MR. ANDERSON: I will let him read the whole statement (tendering document).

(There was a brief interruption, after which the following further proceedings were had herein:)

THE WITNESS: Okay.

BY MR. GOLDENBERG:

Q Do you recall further there were a series of questions from Mr. Anderson, and you answered in effect, well, you could just preset that, and here we were talking about the knobs 111 or 112 in Plaintiff's Exhibit 90?

A Yes.

Q And you could preset it so that it was in the center --

A At any position, according to the choice of the player.

Q At any position? And they you could play a game that way?

A Yes.

Q Suppose you were playing a game, and we have a right-hand player and a left-hand player.

A All right.

Q And both players preset their knobs so that the ball always goes down. That is possible, isn't it?

A It is a possible setting.

Q And that was contemplated within your answer to Mr. Anderson's question, wasn't it?

A No. I don't believe so.

Q What was contemplated, then?

A

A The setting that I contemplated was considering Player B to give his knob an orientation such that the ball after coincidence would move down, and give the player a setting such that after coincidence with Player A the ball would move back up.

Q I see. Well, let's consider that. Player A now is going to have his ball go down.

A Well, the way it is drawn, I was choosing B to go down. I don't care. Whichever choice you want to make.

Q Then they start playing the game?

A Yes.

Q And no matter how either player moves his paddle, he can never change what is going to happen to his ball after that, can he?

A If that is an agreed upon condition.

Q That is what you proposed as an alternative, wasn't it?

MR. ANDERSON: Your Honor, I don't think that was the proposal.

THE COURT: Overruled. It is cross-examination.

If it was not, he can so state.

BY MR. GOLDENBERG:

Q Wasn't it?

A If it was agreed upon before the game begins

to have a preset condition for the players?

Q Yes.

A All right.

Q And contemplated within that surely is where the agreed upon condition is where the ball goes down all the time.

A No. It doesn't go down all the time.

Q I say contemplated within what you said where you could preset, the players could set it up that way, if they choose.

THE COURT: I think the word "contemplate" is ambiguous there. You are using it in terms of literally comprised within --

MR. GOLDENBERG: Comprised within is the purpose of my question.

THE COURT: Ask him what he had in mind when he used it.

BY MR. GOLDENBERG:

Q When I use "contemplated", I don't mean that that is necessarily what you had in mind, but it was encompassed within the scope of the answer that you gave.

A It is a possibility to have established those conditions, if that is what you are asking. That is, among the choices for presetting the knobs, that is one possibility.

Q In any case, once it was pre-set, as you indicated was a possibility, in the play of that game it was never going to be changed, was it?

A That's correct. The knobs would not be changed in that particular example.

Q Would that game look anything like the Pong or the Pro Tennis games that we played here today?

A Yes.

Q It would?

A Sure. If I have Player B set so that the ball moves down -- can I illustrate with the pointer?

Q I will tell you what I would rather have you illustrate with, sir, which is the Odyssey game and the television receiver over there.

Could you hook that up and do that?

A I can do it.

Q Would you?

A Should we describe what would happen first?

Q Well, I want your best answer, and if you feel you should describe what would happen first, let's go ahead and do that. Then let's demonstrate with the game itself.

A Of course, there are constraints on the setting of the knob for which the game can be played. If you have too large a vertical component velocity -- assuming Player B reached coincidence, if you have too large a velocity component by an accidental choice of the setting of the knobs, then the ball would go off the screen before Player A could reach coincidence with it. That wouldn't be a very interesting choice of pre-set conditions.

Q It wouldn't be much of a game, either, would it?

A That particular choice wouldn't be very interesting.

Q If you set the knob at where perhaps the angle is not so sharp, where it didn't go off the screen --

A Right.

Q -- but it would always go down.

A From Player B it would always go down, and from Player A it would always go up.

Q Is that what happens in the Pong games?

A No, it is not.

Q Or the Pro Tennis games?

A No.

Q Nothing like that?

A Depending on --

Q Could you answer my question? Nothing like that?

A It is not. That is correct.

Q Now, could you tell me where in the '507 patent there is any disclosure or suggestion about pre-setting the knobs the way you indicated?

A In '507?

Q Yes, sir. Do you have a copy handy?

A Yes, I do.

Q Take your time and look at it.

A All right.

(There was a brief interruption, after which the following further proceedings were had herein:)

THE WITNESS: I have to find Fig. 12A first.

Let's see. We would be referring to a game which would be described by Figure 12A.

BY MR. GOLDENBERG:

Q Yes, sir.

A "One typical game is a simulated ping pong game, and this is illustrated in Figs. 12A and 12B."

Q You are reading from --

A I am reading from '507.

Q The bottom of column 13?

A That is correct. And the top of page 14 there is a description of the way in which the game is played.

And it mentions that the vertical velocity -- let me see if I can find any exact point -- yes, beginning on about line 32, they say that, "The V_R and V_L off-screen positions of ball 113 are controlled by players A and B, respectively, by adjustments of potentiometers 125 and 126 via knobs 127 and 128."

You are looking at '598, which is why there is not a correspondence.

Q All right, that has a reference to off-screen position, doesn't it?

A Yes.

Q Is that a reference to the travel of the ball across the face of the screen?

A No, I guess it isn't but --

Q What --

A -- there's a later suggestion in here that, however, if he hits the ball, it bounces off his paddle and starts left toward H_L , V_L , and now he has control of his flight, and by adjusting V_L with his other hand, connected to potentiometer 126, he can send the ball up or down, and even try to wiggle it around Player A's paddle.

Q Have you finished, sir?

A Yes.

Q Can you agree with me that there's no teach-

ing or suggestion in the patent of presetting those knobs during the play of the game?

A No, I can't agree. Presetting it is a special case of being able to adjust it.

Q Well, can you find it for me, sir, in the patent?

A I cannot find the statement that suggests pre-setting the knobs.

Q So what we have, sir, is your extrapolation on to the patent, don't we?

A I view that suggestion as a special case.

Q What suggestion is that?

A The suggestion of presetting the knobs, as a special case.

Q What do you mean by "special case"?

A Among the possibilities for changing the position of the knob and moving the knob is the possibility of that motion being zero.

Q All right, let me see if I can't finish this up. I think I do have your agreement there is no express teaching to that effect in the patent, is there?

A There is no statement in the patent to the effect of leaving the knob exactly fixed.

Q All right, sir, isn't the same thing true for the '598 patent?

A Yes.

Q I'm sorry?

A To the best of my knowledge.

Q Is your answer yes?

A Yes, to the best of my knowledge.

Q Well, do you want to take your time and look at it, because I want you to be sure.

A All right. Once again I will refer to Figure 12A and the associated discussion.

Q Well, once again, with reference to Figure 11A and 11B, column 10, "The inputs to coincidence detector --"

A I'm sorry, could you tell me where you are reading, sir?

Q Yes, bottom of page -- bottom of column 10, top of column 11. In fact, on the top of column 11:

"The V_R and V_L positions of ball 100 are controlled by players A and B, respectively, by adjustments of potentiometers 109, and 110 via knobs 111 and 112, respectively."

I think we have the wrong chart up again.

A I seem to persist on having the wrong chart. I apologize.

A This is 12A, so I will go to --

Q You testified about 12 --

A Yes, that's correct. I just need to find

the statement in here.

Oh, column 12, line 19:

"The vertical position control of the ball is determined by a pair of potentiometers 109, 110, in the manner previously described with respect to the ping-pong game of Figure 11."

Potentiometers 109 and 110 are shown in the center of that exhibit.

Q All right, sir, that controls vertical position?

A That's correct.

Q Now, is there any suggestion in the text description accompanying that Figure 12A that you can play a game with those pre-set, and don't move them?

A That's one of the possibilities by virtue of the control over the ball being by the position of the potentiometers. Fixed position is one possibility.

Q Okay, but once again we are at the point where you know of no text in the patent which says that?

A Which says what, precisely?

Q What you just said, sir.

A No, what I said was by virtue of the -- I'll read it:

"The vertical position control of the ball is determined by a pair of potentiometers 109, 110 in the manner previously described with respect to the ping-pong game of Fig. 11 whereby either potentiometer 109 or potentiometer 110 is applied to the e_{v3} input of the dot 3 generator 101."

That's describing the control over the vertical motion of the ball over either one potentiometer or the other.

Q But isn't the game taught by the patent as one

Ribbens - cross

where the player exercises this English control by manipulating these knobs 111 or 112?

A It seems to me that that's what I said, that he has control over the vertical motion by virtue of his input through knobs 111 or 112.

Q And he manipulates them during the play of the game, doesn't he?

A Yes.

Q He doesn't pre-set them?

A That's just one possibility, is it not?

Q All right, sir.

Now, could you connect up the television set and the Odyssey game 1TL 200, and demonstrate what that game would look like with the English control pre-set and not disturbed during the play of the game?

A Yes. May I have some help in having it connected?

Q I certainly will give you all the help I can, which isn't going to be very much, but --

A No, I was thinking of the people sitting over here.

MR. GOLDENBERG: For the record, the witness is connecting up Plaintiffs' Exhibit 7-A to the Zenith television receiver --

MR. ANDERSON: That's a Magnavox.

Ribbens - cross

MR. GOLDENBERG: I'm sorry, Magnavox television receiver, Plaintiffs' Exhibit 6.

BY MR. GOLDENBERG:

Q Is it correct, Dr. Ribbens, that at this point we see no the screen two spots separated by a line?

A That's correct.

Q Are those the hit spots or the hitting spots?

A Those are the hitting spots.

Q Those are the paddles?

A That's correct.

Q And how do we get the ball to come across the screen?

A Now, what is it you wanted?

Q The English control was not being disturbed at this time, is that correct?

A That's correct.

Q And what we are seeing is the hit spot or ball just going back and forth on a horizontal line, isn't that correct?

A That's correct.

Q Nothing is happening?

A Right.

MR. GOLDENBERG: Could I ask Mr. Anderson to adjust his English control to cause the ball to go

up?

MR. ANDERSON: All right, I'm the spot on the left, so --

MR. GOLDENBERG: All right.

Could I ask Mr. Williams to adjust his English control to cause the ball to go down?

MR. ANDERSON: You don't want us to try to intercept it, I take it?

MR. GOLDENBERG: Yes.

MR. ANDERSON: You do want us to try to hit it back and forth?

MR. GOLDENBERG: Yes.

MR. ANDERSON: You have to serve --

MR. GOLDENBERG: I'm sorry, who is the left and who --

MR. ANDERSON: I am on the left.

THE WITNESS: I have problems.

MR. ANDERSON: Well, we will switch around.

THE COURT: What Mr. Goldenberg wants is that you not move the control during the play but only initially, make an initial setting of up and down, and then do nothing, is that correct, with the control?

MR. GOLDENBERG: May I ask, Mr. Anderson and Mr. Williams, have you adjusted your English controls

Ribbens - cross

in that fashion?

MR. ANDERSON: We have them adjusted -- we are just not doing anything.

MR. GOLDENBERG: I understand, sir, that your English control is adjusted so that when it hits the paddle on the left, the ball travels upwardly?

THE WITNESS: Yes, but now it's possible that between the time of coincidence, that Mr. Williams could pre-set his English control unknown to Mr. Anderson.

MR. GOLDENBERG: He is going to change it?

THE WITNESS: Yes, of course.

MR. GOLDENBERG: I see, so he is not going to leave it pre-set through the game?

THE WITNESS: No. I said pre-set prior to coincidence.

BY MR. GOLDENBERG:

Q Who said that?

A I did.

Q I thought you said pre-set throughout the game.

A Then I misspoke. It's still a possibility.

All I was trying to do was illustrate a possible way of playing the game. It can be pre-set before --

MR. GOLDENBERG: May I ask, Mr. Williams, is your english control preset to have the ball go down?

MR. WILLIAMS: I think so, but I would have to try it to be sure.

MR. ANDERSON: That's up.

THE WITNESS: That's up.

THE COURT: You must concede, Mr. Goldenberg, that it makes the game a lot more intellectually demanding.

MR. GOLDENBERG: One requires manipulative skills with respect to potentiometers, your Honor.

MR. ANDERSON: Do you want me to change the preset to go up? I didn't do it as it was coming toward my -- you must have the reset --

BY MR. GOLDENBERG

Q So by "preset", Dr. Ribbens, so we can understand this, you didn't mean preset throughout the game? It was going to be changed each time there was coincidence?

A That's another possibility. All I meant was -- what I was trying to indicate is that it's not necessary that the english be changed during the flight of the path of the ball.

Q That's a little bit different than what you said before.

A Then I didn't speak very accurately.

Q Okay, sir. So, therefore, in the play of the game, in order to change what's happening in the game, the english controls really aren't preset, or not contemplated to be preset, are they?

They are going to have to be manipulated by the player?

A They are going to have to be?

Q Yes.

A You mean to make the game interesting?

Q Yes.

A Perhaps.

Q Why do you say perhaps?

A Depends on the level of skill and interest.

If they were small children, they might --

Q You mean a three-year-old might like that?

A I don't know. That depends. Depends on the individual, I think, doesn't it?

Q That's what is taught in the patents '507 and '598, isn't it?

A What is taught? Say it again.

Q This change, this english control, in order to vary vertical path of the ball, isn't that what's taught there?

A I think what's taught in the patent is that

the english control provides control over the vertical path of the ball.

Q Does the --

A It's up to the individuals playing the game how complex or simple that is to be.

Q But this isn't a patent on the rules of the game, is it?

A No, it certainly is not.

Q Is there anything else taught in the patent about that?

A About what? Is there anything else taught in the patent about what?

Q About changing the english control in order to change the vertical travel of the ball, other than what you have just said a moment ago?

If you don't remember that, I can have the clerk read it back -- or the reporter read it back to you.

A No. The patent teaches a number of special examples.

For example, you can wiggle the ball around the opponent's paddle if you wish.

Q That, once again, requires that the player exercise manual control?

A That requires that the player exercise manual

control.

Q Isn't the fact that every game disclosed in either the '507 or the '598 patent requires that the player exercise manual control by means of a knob in order to change the vertical travel of the ball?

A I think only in the special examples is that true, that is, Figure 12A, for example, in this case, but I think according to the teachings of the claim, that's not required.

In other words, english control is one option in the design of a game in which vertical control can be exercised by a change in the game electronics.

Q I understand that, sir, but let's put the claims aside for a moment, and let's talk about the drawings of the patent, let's talk about the descriptive text of the patent.

A Okay.

Q Isn't what I said so?

A You said that -- repeat what you said just for clarity. I think I know.

Q Surely. That every game disclosed in the patent, taught in the patent, requires that the player exercise manual control by means of a knob in order to change the vertical travel of the ball?

A When you say "every game taught by the patent"--

Q Well, if the word "taught" troubles you, let me say disclosed.

A The games described by the text, yes.

Q Yes, you agree with that?

A I think so.

Q Well, if you have any hesitation --

A I mean there may be some -- those special examples which we just considered, that's correct.

Q If you have any hesitation, sir, I would prefer that you take the time and review the patents.

A Okay, I think that's a good idea.

Well, I think I found one example in which that is not true.

Q All right, sir.

A If you look at Figure 14A --

Q Which patent are we looking at?

A We are looking at '598, Reissue '598, and in that particular game, the game described with respect to Figure 14A, there is no english control at all.

Q What kind of game is that?

A It's a simulated golf putting game.

Q Golf putting game?

A Yes.

Q What determines the direction of travel in that game?

A It's determined by the control inputs to the dot generator, e_H and e_V .

Q Well, sir, can we come to that in terms of -- what I meant by that was in terms of how does the player control the direction of travel in that game?

A Oh, well, I'm not sure he has control over it, according to the description. I believe those were preset voltages.

Q Let me understand, sir. This is a golf game, where one is trying to knock a ball into a hole.

A Yes. I believe so.

Q And you don't give the player any way of aiming?

A No. Excuse me. No. It is the hole. I misread what you were saying. The hole into which he is to try to putt the ball has fixed voltages. He has control, of course, over the vertical and horizontal motion by virtue of a pair of knobs.

Q Of the ball or of the putt?

A Of the ball.

Q Of the ball? So there he is controlling it.

A And when coincidence is reached, then it activates the crow bar circuit.

Q Which is the crow bar circuit?

A The crow bar removes the dot, the ball, from the screen.

Q It disappears from the field of play?

A Yes.

Q But the player there controls the direction of the ball?

A That's right.

Q Well, sir, if we could refer to Pro Tennis, the game that was demonstrated this morning, what con-

trols the direction of the ball when it is hit by a paddle in that game?

A By a paddle? It is controlled by which segment on the paddle the ball hits.

Q Can it go up?

A Yes, it can.

Q Can it go down?

A Yes, it can.

Q Can it go horizontally?

A Yes, it can.

Q Does the player have to manipulate any separate control to make that happen?

A The player only manipulates one control, or two, if he is playing both paddles.

Q He didn't have to manipulate any control over the ball, did he? He just manipulated the paddle.

A He manipulates a single control and attempts to provide, to control, coincidence thereby, at which part of the paddle at which coincidence will occur.

Q Do you recall this morning in your testimony in response to questions from the Judge and Mr. Anderson that you expressed a view that that was equivalent to the english control disclosed in the '507 and '598 patents? Those perhaps aren't your words.

Let me offer you your testimony in that

respect, which I believe starts at page 883.

A What was the page again?

Q Page 883. I don't believe you have it in front of you.

A Possibly not. 883?

MR. ANDERSON: That is this morning's transcript?

(There was a brief interruption,
after which the following further
proceedings were had herein:)

BY MR. GOLDENBERG:

Q I direct your attention to the bottom of page 883, where the Court says:

"What do you do, if anything, in Pong
to impart english?"

Then your answer commences, sir, and if you will look at the middle of page 884, at one point you say that whatever is done in that game is analogous to presetting the english control on the Odyssey game to a fixed value.

Do you have that, sir?

A Not yet.

Oh, yes.

Analogous, in that it would give a fixed vertical velocity.

Q I'm sorry. I don't understand what you mean by that?

A Well, if the english control on the Odyssey game is fixed, then after coincidence the vertical component of the velocity of the ball is fixed.

THE COURT: What does velocity have to do with this? I think of it in terms of direction rather than velocity.

THE WITNESS: Velocity is a vector concept. By "vector" I mean it is a quantity which has both magnitude and direction, and when we talk about the vertical component, we are talking about that part of the motion which is moving it vertically across the screen and the horizontal component is that component or that representation of the motion which is horizontal. And, of course, the two together combine to give the net motion of the ball or symbol or any object.

BY MR. GOLDENBERG:

Q Doesn't velocity include a limitation with respect to direction? In other words, it's speed along a certain path, isn't it?

A Velocity is a vector quantity. Speed is the magnitude of velocity.

Q But aren't we talking here about direction, what direction the ball is going?

A I don't know what we are talking about. What was the question again, this particular statement?

Q Well, I have reference perhaps to the Judge's question.

Aren't we concerned in the playing of these games in the first instance with the direction of ball travel? We understand it travels at some velocity or another, but the thing we really are talking about, the thing we really are interested in, is the direction it is going, isn't it?

A I think the speed is important, too.

Q Tell me why.

A Because it influences the time of flight of the ball.

Q It's --

A It influences the time of flight of the ball.

Q I see.

THE COURT: But the player doesn't control the speed of the ball, does he?

THE WITNESS: Not necessarily, no, though it is possible for him to, and it is possible to design a game such that he has control over the speed.

THE COURT: In any of these games that I have seen played here in the courtroom, did the player have anything to do with the speed?

THE WITNESS: No, the player did not.

BY MR. GOLDENBERG:

Q So we are concerned with direction, aren't we?

A Okay. Well, that is not quite true, because, as you are aware, the total velocity is the vector sum of the horizontal and vertical components. If the ball is moving with a fixed horizontal component and we have increased the vertical component, we have increased the vector length, the resultant of the vertical and horizontal components, so we have changed the speed as well. Is that not true?

Q Yes, sir.

A So I thought I was being more precise. You asked me if he has control over the speed. Well, to the extent that speed is the scale or length of a vector

quantity and the vector length is changed, he does have control of the speed.

Q In any case, to return to this matter, you stated to the Court, and this is on page 884 in the middle, in response to this question from the Court:

"I know the result is the same, but is the result achieved in the same way?"

A Is the result of changing what or doing what?

Q Well, perhaps we had better --

MR. ANDERSON: Does he have the transcript?

THE WITNESS: I have it in front of me, but I am not sure to what he is referring.

THE COURT: So that the record will be clear, maybe you had better read to him the question.

MR. GOLDENBERG: Yes, your Honor. It has gotten a little confused, and I apologize for that.

THE COURT: You may not have the same pagination involved there.

THE WITNESS: I am not trying to be obtuse. I want to make sure I am answering the right question.

Ribbens - cross

BY MR. GOLDENBERG:

Q I understand that, and I do direct your attention to the bottom of page 883.

A Okay. I am there.

Q Let me read this:

"The Court: What do you do, if anything, in Pong to impart English?"

A Okay.

Q "The Witness: That is what I was trying to suggest. I was not very successful. But if you can cause the paddle to intercept the ball just at the right spot, at the top or at the bottom, you will notice Mr. Anderson hit it near the center of the paddle, and that caused it to go straight out.

"The Court: Is it anything like the mechanism which in Odyssey involves a separate control for the imparting of English?

"The Witness: Yes, except in this particular case.

"The Court: I know the result --"

MR. ANDERSON: Your Honor, just for the record, that was an interruption. I think it really was "Yes, except in this case--".

MR. GOLDENBERG: There was an interruption there.

THE COURT: All right. Typically I interrupted before I got the answer.

MR. GOLDENBERG: There were dashes, indicating an interruption.

"The Court: I know the result is the same, but is the result achieved in the same way?

"The Witness: This would be analogous to pre-setting the English control on the Odyssey game to a fixed value so that when the paddle and the ball reach coincidence, the ball would come off with a particular velocity analogous to hitting the paddle in a particular segment. I gave it a downward component, and there I gave an upward component to it because I collided with the top of the paddle. In rotating these knobs I am able to influence the position of the paddle."

BY MR. GOLDENBERG:

Q Now, what you were doing there was changing the vertical position of the paddle, weren't you?

A Yes.

Q And you were controlling or attempting to control the direction of ball bounce by controlling where the ball hit on the paddle?

A Yes.

Q Now, English control in the '507 and '598 patents is not done by controlling where the ball hits on the paddle, is it?

A That is true.

Q It is done by controlling these knobs 111 and 112 in the case of the '598 patent.

A That's correct.

Q And the knobs 127 and 128 in the case of the '507 patent.

A That is correct.

Q Is it your opinion that those are the same things?

A Well, it depends on what level of detail you are talking about. They are physically different components, of course.

Q Take it on any level you care to. Just give me an answer.

A On one level, I think on the highest level of abstraction, they are the same, in the sense that the ball's vertical component of velocity is influenced after the point of collision, which is the teaching of the patent.

When the ball reaches coincidence with the paddle, it's vertical components of velocity will be transferred from one set of game conditions to another.

Q Is this somewhat on the same level -- perhaps

you have heard it in Court here today or yesterday -- of drawing some relationship between stairs and an elevator, that both of them are going to get you to the 40th floor?

A No. Of course not.

Q But they are a little bit different, aren't they?

A Not the same level of abstraction.

Q What level of abstraction are we talking about?

A A functional level of abstraction, in the fact that after coincidence has been achieved between one of the player controlled spots and the ball spot, the vertical velocity is influenced by a changed set of circuit conditions.

Q But the circuits are different, aren't they?

A Yes. The circuit in Pro Tennis is different from the circuit illustrated on Fig. 12A of whatever that exhibit number is.

Q Both the '598 and the '507 patents?

A Yes.

Ribbens - cross

Q The circuits are different, quite different.

A Well, quite different --

Q If you can't accept it --

A I wouldn't say quite different.

Q They are different. They operate in a different way, don't they?

A Wait a minute. Be careful. The potentiometer which controls the vertical component of velocity is a different mechanism for controlling the vertical velocity than the pre-set inputs on a set of counters.

Q I am not talking about that, sir. I am not talking about that. I am talking about what happens to the ball after it hits the paddle, and I am talking about the circuits which are provided in the patents in suit, the '507 and the '598 patents, and the Pro Tennis game or the Paddle Ball game.

A The circuits described in '507 and '598 describe a coincidence circuit. Following coincidence as detected by that device, the vertical component of velocity is changed, and I think that is true in both cases.

Q I am talking about the electrical circuits. Are they the same?

A The electrical circuits? You mean the . . .

example --

Q Well, let me put it this way, and let me use claim language, if I may, and you are familiar with this, about means for imparting a distinct motion, talking about whatever is provided in these devices to perform that function. This is after coincidence.

A I know, but what are we comparing? I want to know exactly what I am comparing. I understand what the circuits are in Pro Tennis which cause the vertical velocity components to change. There is a 7483 full adder, and that provides pre-set inputs to 9316 counter.

What am I to compare that with, sir?

Q Let me ask you this: Is there a full adder --

A There is no full adder --

Q -- in the '507 patent?

A -- in the drawing of '507.

Q Is there a full adder in the '598 patent?

A There is no full adder.

Q What is a full adder?

A A full adder is a binary circuit device which can add to, in this particular case, four-bit numbers in the logical sense.

Q And it is the full adder that imparts the distinct motion in the case of the defendants' claims,

Ribbens - cross

isn't it?

A The full adder provides pre-set inputs to the counter. The counter determines the position. That is correct.

Q Well, sir, if the full adder doesn't impart the distinct motion, what did you mention it for?

A I didn't say it did not.

Q Can you tell me whether or not it does?

A The outputs of the 7483 provide control signals which determine the vertical component of velocity.

MR. GOLDENBERG: I am sorry. Could I have the answer back?

(The record was read by the reporter
as requested.)

BY MR. GOLDENBERG:

Q I think it is your testimony that there is no full adder in either one of the patents in suit.

A Correct.

THE COURT: Is a full adder a circuit?

THE WITNESS: It is an integrated circuit in this case.

BY MR. GOLDENBERG:

Q I would like you to turn to claim 51 in the '507 patent.

A I have it.

Q The introductory clause of that claim reads:

"Apparatus for generating signals --"

A "Symbols".

Q --"upon the screen of a television receiver."

MR. ANDERSON: The word is "symbols."

MR. GOLDENBERG: "Symbols". Didn't I say that?

THE WITNESS: You said "signals".

MR. GOLDENBERG: I misspoke, and I apologize.

BY MR. GOLDENBERG:

Q "Apparatus for generating symbols upon the screen of a television receiver to be manipulated by at least one participant."

Do you recall that language?

A I am reading it, yes.

Q Could you tell us what a television receiver is?

MR. ANDERSON: Your Honor, we have a stipulated definition of "television receiver".

THE COURT: That's all right. That doesn't

make the question improper.

MR. ANDERSON: All right, your Honor.

MR. GOLDENBERG: Even I may be wrong.

BY THE WITNESS:

A Television receiver -- should I stop?

BY MR. GOLDENBERG:

Q Could you tell me what a television receiver is, sir?

A It is an instrument capable of displaying two dimensional images on the face of a television picture tube or cathode ray tube in response to a video waveform. I think it needs more qualification than that to be precise, but that is a starting point.

Q I would like to have an answer with which you would feel satisfied.

A The video signal must include the horizontal and vertical synchronizing pulses.

Q Does it include a radio frequency tuner?

A Not necessarily.

Q A television receiver does not?

A No.

Q Why did you show such a device on your Exhibit

86?

A Because I was trying to depict a block diagram for a larger class of instruments, which would include

a broadcast television receiver, which includes, in addition to the video amplifier and the synchronizing and deflection circuitry, the RF tuner, the intermediate frequency amplifier, and the video detector.

Q You are drawing some distinction between television receiver and broadcast television receiver, is that it?

A Yes, sir.

THE COURT: When we talk about radio frequency tuner again, is that having to do only with sound, or is that what brings in the picture from an outside channel?

THE WITNESS: That is one way. That is the way the signal is brought to a television receiver, a broadcast television receiver, from a broadcast station or a CATV.

THE COURT: So it is not related to sound?

THE WITNESS: No.

THE COURT: It includes the whole --

THE WITNESS: Radio frequency carrier is the means for getting electromagnetic signals through space.

BY MR. GOLDENBERG:

Q Do you know whether or not really the composite video signal broadcast by television studio in-

cludes a certain portion devoted to the sound or audio?

A Yes.

Q And that is broadcast along with the picture or video information, isn't it?

A Yes.

Q You have drawn this distinction between a television receiver and a broadcast television receiver?

A Yes.

Q Do you have in mind any literature reference, any technical dictionary or textbook or article or something that might agree with you on that?

A I don't have it right at my fingertips.

Q Have you ever seen any?

A No, I haven't really looked for a definition. I think I understand what a television receiver is. I think, as a matter of fact, the patents give a definition of what a television receiver is.

Q Well, let's see if we can't find that.

A All right.

THE COURT: Let me ask this question, and I don't mean to get into the middle of the fight here, but did the fellow who invented television in his garage, or wherever it was, before we had WCFL and Channel 11 and so on, did he have a television receiver?

MR. GOLDENBERG: I'm not too sure I understand the question, your Honor. Your question might be was there someone broadcasting signals that he could pick up, or was he generating his own signals locally?

THE COURT: Well, maybe I missed the point of your present dialog here, but is it your point that some televisions do not have the capacity to pick up commercial broadcast signals, and, therefore, they are not television receivers?

MR. GOLDENBERG: I believe that is perhaps the witness' point, your Honor, not mine. My

position is that the defendants' games are not television receivers, they are not standard television receivers, they are not broadcast television receivers, they are not --

THE COURT: All right.

MR. GOLDENBERG: -- any kind of television receiver.

THE COURT: I think I'm jumping in too early, because I don't have your full point yet. I thought maybe I had it.

BY THE WITNESS:

A I think as defined by the patent a television receiver is that portion of the block diagram shown on the board which is not colored but may include the uncolored portions depending upon the application.

BY MR. GOLDENBERG:

Q Where are you reading from in the patent, sir?

A Well, as a starting point, let's consider Figure -- we have to find it here, if you will wait just a moment -- Figure 18A is a description of playing of a video game, and with respect to that, you can refer to column 19, line 30.

Q Well, now --

A In this case, you will see that as the person who wrote the patents intended, the RF carrier is not

fundamentally required for a television receiver.

Q Well, I understand that as your view, sir, but isn't Figure 18A described in column 19, line 30 as a conventional television receiver?

A Yes, that's the terminology used.

Q And you look at the figure, and isn't that language used in the figure --

A Yes.

Q -- conventional television receiver?

A Yes.

Q And isn't the purpose of the switch 200 to permit whatever is shown and described there to operate either as a conventional television receiver or as a game playing device?

A Well, I would -- in my terminology, I would call it a broadcast television receiver if the switch was in the position 202, and it would be a standard television receiver -- in fact, in either case it's a standard television receiver. It's suitable for playing games when the switch is in the 203 position.

Ribbens - cross

Q Okay, when the switch is in one position, it's a standard television receiver --

A No, I think -- the block, I think, is described by the claim as a standard television receiver.

"...apparatus for generating symbols upon the screen of a television receiver."

Q Yes, sir, but are you still maintaining this distinction, which I believe you had a moment ago, between a broadcast television receiver and a television receiver?

A A broadcast television receiver is a television receiver which has so-called front end, the RF tuner, the intermediate frequency amplifier, the video detector.

Q Now, is there some distinction between that kind of device and a television receiver?

A Is there some kind of a distinction, you say, between that and the television receiver?

Q In your mind.

A It's one form of a television receiver, has front end, radio frequency tuner, intermediate frequency amplifier, video detector, capable of broadcasting --

THE COURT: Could we just have a definition of television for my purposes?

THE WITNESS: All right. That was a definition

Ribbens - cross

which I gave in the early part of the testimony, as a communication means for sending two-dimensional images from one point, which we will call a transmitter, to another point, which we will call a receiver.

The television receiver is the instrument which receives the video signal and displays the two-dimensional image.

Now, there are many ways of communicating between the transmitter and the receiver. One is by way of a cable directly with the video output, using the video signal, which we have illustrated earlier on one of our exhibits -- I have forgotten the number -- and the other is to modulate an R.F. carrier and send it through the air waves from a transmitting antenna to a receiving antenna, or perhaps through cable television, but, nonetheless, according to my definition, the television receiver consists of that part which can accept the video signal and display a two-dimensional image to the viewer.

THE COURT: Does your definition leave out anything that was included in what your understanding of the first television set was --

THE WITNESS: The first television set --

THE COURT: -- that was invented by -- is it

Howard DeForest, or somebody -- whoever it was --

MR. GOLDENBERG: I think Zworykin and Goldsmith in the early days.

THE WITNESS: Yes, yes, and I think you will find in those days they weren't concerned about broadcasting. They were connecting their camera to a laboratory receiver.

THE COURT: That was my question. What did he have in his garage?

THE WITNESS: It was a little more than a garage. It was RCA, I believe.

THE COURT: Oh, all right.

THE WITNESS: I mean, it was a major effort.

THE COURT: I guess I'm thinking of Thomas Edison.

THE WITNESS: No, he didn't invent television.

THE COURT: But, anyway, did that first television include anything by way of components that you have left out of your definition of a television receiver?

THE WITNESS: Well, I don't have access to the exact records. I remember reading a historical book describing the development of television, and in that description they performed many experiments. In the laboratory, they connected the camera directly to the television receiver with just wires, and no

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radio frequency carrier.

But their main interest was in broadcast commercial television, so they soon went to transmitting from an antenna, that is, modulating video signal on a radio frequency carrier -- I'm trying to remember the exact frequency -- I think it was in the UHF band, about 30 megahertz if I remember -- and performed initial experiments in New York City, used the Empire State Building --

MR. GOLDENBERG: I think it was about the time of the 1939 World's Fair, a transmission from Schenectady.

THE WITNESS: But the display with a television receiver took place long before that in the RCA laboratories, and there was a direct connection between the camera and the receiver.

THE COURT: Would that, in your view, be analogous to the direct connection between the control box of the Odyssey game into the --

THE WITNESS: Yes, it would.

THE COURT: -- antenna --

THE WITNESS: Oh, no, not into the antenna.

THE COURT: -- not into the antenna, but the video amplifier?

THE WITNESS: That would be my view.

BY MR. GOLDENBERG:

Q So you are going back to this early -- the late 1920s, early 1930s work to find a definition --

THE COURT: Well, in fairness to the witness, that's in response to my question.

THE WITNESS: That's exactly in response to his question.

THE COURT: Which I am frank to concede was for my benefit. It probably has no value at all, but it's a little bit helpful to me.

BY MR. GOLDENBERG:

Q Well, let's deal with the '507 patent in this respect: Wouldn't you agree, sir, that the purpose of this patent, principal purpose, was to provide a means whereby people at home could take the television receiver they had in their dens or living rooms or wherever it was, and play games on it?

A That's one objective. I don't know that it was the principal objective.

Q You won't accept --

A I don't know that it was.

Q You don't know that. But that was one objective?

A That was one objective.

Q And so in the context of that objective, there is a discussion of television receivers, isn't there?

A You mean in the --

Q In the '507 patent?

A Yes.

Q I direct your attention to column 1 of the patent.

A Okay.

Q And in line 36:

"Heretofore, color and monochrome television receivers have been used generally by the home and other viewers as passive devices, i.e., the television receiver is used only as a display means for programming originating at a studio."

A I follow that, yes.

Q Now, the television receiver, in the context of that sentence, isn't that a device with a front end as we have been calling it, one capable of receiving broadcast signals?

A One capable of receiving broadcast signals certainly would have these components, yes.

Q Can we shorten that by calling it the "front end"?

A Okay.

Q Is that acceptable to you?

A yes, yes.

Q Now, I have been unable to find in the patent any reference to anything other than that kind of television receiver, that is, one with a front end. If you can find it for me, sir, I would appreciate it.

A Yes, sir.

MR. ANDERSON: I object, only that you are not then saying that one with a front end is the only thing within the definition, or that this witness said that one with a front end is the only thing within this definition.

MR. GOLDENBERG: Oh, no.

MR. ANDERSON: As used in column 1 of the patent.

MR. GOLDENBERG: Column 1, something used in the home capable of receiving broadcast signals.

THE WITNESS: Yes, I think column 19 gives reference to a television receiver without using the "front end" as we have chosen to call it, beginning on line 22:

"As mentioned before, the control units or any parts thereof can be built into a television receiver as a constituent part thereof rather than be a separate unit and coupled to antenna terminals as described above."

THE COURT: I'm sorry, Doctor, I'm --

THE WITNESS: I'm in column 19 of '507.

THE COURT: Oh, column 19. I was on line 19.
Column 19, and what line?

THE WITNESS: 22.

THE COURT: All right.

BY THE WITNESS:

A "As mentioned before, the control units or any parts thereof can be built into a television receiver as a constituent part thereof rather than be a separate unit and coupled to antenna terminals as described above."

BY MR. GOLDENBERG:

Q And there television receiver means something other than broadcast television receiver?

A That's correct.

Q Do you know whether or not Plaintiff's Exhibit 43-E is capable of receiving broadcast signals?

A No, I do not know. I suspect it's not. The evidence is that it's not, but I don't know that it's not.

Q Do you know whether or not this Pong game over here is capable of receiving broadcast signals?

A It is not, as it stands.

Q Does "television monitor" mean anything to you,

the phrase?

A Yes, it does, as a matter of fact.

Q Could you tell me what it means, sir?

A "Television monitor" is another -- well, "monitor" is another name for a form of television receiver.

Q Well, in order --

A A television monitor can have either a video input or it can have an RF input that is antenna terminals, that is, VHF and UHF.

Q Do you know of any company that makes such a device?

A Yes, I do.

Q What company?

A Sony. I can show you an example.

Q Down in the lobby?

A Yes.

Q There's a switch there, isn't there?

A So?

THE COURT: Sounds like you fellows are ready for each other!

THE WITNESS: That's just one example. It certainly has both VHF and UHF.

BY MR. GOLDENBERG:

Q But when you operate that switch in one mode,

it can't receive broadcast signals?

A That's correct.

Q Is there any switch on this device that you know that would permit it to receive broadcast signals?

A No.

Ribbens - cross

Q Something more than operating a switch has to be done?

A Correct.

Q Do you know what?

A I don't know exactly what has been disabled, so I can't answer that.

Q I refer you to Plaintiffs' Exhibit 41-C.

A Do I have that up here?

Q Well, sir --

A I don't have it.

Q You don't have it?

A I don't have a copy of it. What is it -- oh, wait, is this --

MR. ANDERSON: I handed the exhibit up to the Court, I believe, yesterday.

THE COURT: Oh, it's connected with one of these.

Well, what is it?

MR. GOLDENBERG: I'm going to hand it to the witness.

BY MR. GOLDENBERG:

Q Dr. Ribbens, what this is is a document from the files of the defendant, and it lists the "Zenith TV Modifications for Paddle Ball (Pro Tennis)."

A Okay, yes, I have seen this before. It's hard to

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read, but --

Q I found it hard to read.

Would you agree that that modification involves the removal of certain tubes from that television receiver?

A That's correct, 6 BZ6 IF tubes.

Q And those are the tubes which are in this second block here --

A That's correct.

Q -- on your Exhibit 86, aren't they?

A Correct.

Q So there's no way an electrical signal could get through there, is that correct?

A Correct.

Q And if you wanted one to get through, you would have to put those tubes back in, wouldn't you?

A Correct.

Q Well, sir, returning to claim 51 of the '507 patent, I take it that you would still consider the Pro Tennis game to involve the use of a television receiver?

A That's correct.

Q All right, sir. I would like to move on to the next item in that claim, namely, means for generating a hitting symbol. That's the paddle, is it not?

Ribbens - cross

A That's correct.

Q And I believe it's Exhibit 91-A?

A It may still be up there.

Q Now, I believe it's your testimony that the means for generating the hit symbol is outlined in purple on --

A The hitting symbol.

Q --Exhibit 91-A, is that correct?

A You said "hit symbol" didn't you?

Q Forgive me. Hitting symbol.

A That's outlined in purple, yes.

Q Outlined in purple. The unit, B-9, is a so-called 555 timer, isn't it?

A That's correct.

Q What is the unit B-8?

A That's a 7493 four-bit binary counter.

A A four-bit binary counter?

A That's correct.

Q Then following the four-bit binary counter we have certain logic gates, don't we?

A That's correct.

Q And that's in the purple block to the left?

A That's correct.

Q The one a little bit to the right, there's an

H3A unit, which is a 7474. What's that?

A A D Flip-Flop.

Q I'm sorry?

A A D Flip-Flop.

Q Is there a four-bit binary counter in the '507 patent?

A There is none.

Q Is there a D-type Flip-Flop?

A There is not.

Q Is there anything like that in the '598 patent?

A There is not.

Q Is there anything like that in the '507 patent-- or have I said it twice?

A You said '507 and '598.

No, there is not.

Q How about '598?

A No, there is not.

Q What does a four-bit binary counter do?

A It's a trickle counter device. The input to the device is a pulse train, binary valued pulse train. It has four outputs, the four outputs corresponding to the digits, the binary digits in a place position arithmetic, using binary numbers, so that as the number of pulses enter the binary counter, the outputs change.

Q Now, is there anything in the '507 where numbers enter a counter and numbers change?

A No.

Q Anything like that?

A No.

Q Anything in the '598 patent like that?

A No.

THE COURT: Tell me what is meant by "numbers" in this context again?

THE WITNESS: Well, binary numbers. Binary numbers involve just two possible values, zero and one, and you can have a place position numbering system zero and ones the same as you can with the decimal, which has ten separate characters.

Computers and other devices tend to operate with binary values.

MR. GOLDENBERG: Your Honor, if I may, it turned out a few years ago somebody discovered a very happy marriage between a binary numbering system and the capability of electrical circuits, that in electrical circuits you could have a situation where either you had a signal or no signal, say a zero level voltage or some voltage, and these Flip-Flops and all these things we have been talking about do that, and it

turned out to be a rather happy circumstance, because you could use those electrical signals in a so-called binary numbering system, as Dr. Ribbens has said, that you can -- if man had been born with two fingers instead of ten, it's conceivable that's all we would have ever known would be a binary numbering system, and all of his counting would have been done with combinations of zero and one.

MR. ANDERSON: You only need one finger for that.

MR. GOLDENBERG: One finger would have given us a binary system. Thank you, Mr. Anderson.

BY MR. GOLDENBERG:

Q And so the number three, the decimal number three, can be represented in a binary system in what fashion?

A Two ones side by side that would bear a resemblance to the number 11 in the decimal system, and the number 4 would look like 100 in the decimal system.

THE COURT: What, just in a word, if it's possible, what is the difference between this binary system having to do with the hitting symbol in the Paddle Ball and the binary system which was the Flip-Flop in the '507 -- or '598, I guess?

THE WITNESS: You are asking me?

THE COURT: Yes.

THE WITNESS: They are similar in the sense that they operate with binary value voltages, that is, voltages which can have one or two states. That is what we mean by binary.

The flip-flop has one of two states. It can flip from one situation to the other. You can call one condition zero and the other condition one.

BY MR. GOLDENBERG:

Q That is the extent of the similarity, isn't it, sir?

A You are trying to compare a flip-flop with a binary counter?

THE COURT: I guess I was.

THE WITNESS: I am sorry. I was trying to clarify the question.

BY MR. GOLDENBERG:

Q Yes. That is the extent of their similarity, isn't it, sir?

A Yes.

Q There is no other?

A Right.

Q Because there is no unit in the '507 patent

or the '598 patent which is anything like the 7493 unit in the defendants' game, is there?

A That is anything like it? You mean in the sense of counting?

Q In the sense of counting.

A That's correct.

Q There is no counting at all, is there?

A That is correct.

Q In the '507 patent.

A Yes.

Q There is no counting at all in the '598 patent.

A That's correct.

Q Whereas, defendants' games depend on counting, don't they?

A They operate by counting, among other things.

THE COURT: Do you regard this, and I realize I am anticipating redirect, but as we go along I don't want to lose the question, do you regard this as a significant difference?

THE WITNESS: Functionally, no.

THE COURT: Either functionally or structurally. Because one of the things I have to determine here is whether these things accomplish the same result in substantially the same way.

THE WITNESS: I understand your question, I

think.

THE COURT: In your opinion, is this a different way in that context?

THE WITNESS: I think the difficulty in answering that question is one of semantics.

THE COURT: Unfortunately, that is in part what we are dealing with.

THE WITNESS: I teach my students the complete equivalence between the so-called digital way of implementing a function and the analog way of implementing a given function. I view them as being totally equivalent. I am sure Mr. Goldenberg disagrees.

BY MR. GOLDENBERG:

Q Well, sir, I think I do.

A I am sure you do.

MR. ANDERSON: If I may, if you ask about function, and again it probably is redirect, perhaps to have the witness say what the function is might be helpful. I will save it for redirect, if you wish, or let him tell you now.

THE COURT: I realize I am interrupting here a lot, and I hope that counsel will be patient with me.

MR. GOLDENBERG: I welcome it, your Honor.

THE COURT: The reason I am doing it is that this obviously is all new material for me, and it is helpful for me to get these points as they come along, rather than to wait for later when I might have forgotten what the original question was. I don't want to interrupt any more than is necessary.

BY MR. GOLDENBERG:

Q Would you agree that what we have been talking about to some extent is the difference between analog electrical circuitry and digital electrical circuitry?

A There are some aspects of that disagreement or dichotomy between analog and digital, yes.

Q That is what we have been talking about here.

A To some extent, yes.

Q We haven't used those terms yet, but that is where we are.

A That's right.

Q Perhaps to point out the different nature of these kinds of things, I suspect they don't show up on the University of Michigan any more, but perhaps you would remember slide rules.

A Vaguely. I hate to admit it, but yes.

Q A slide rule is a device where the end result is of multiplying and dividing numbers, isn't it?

A Among other things. It can also take logarithms --

Q In the simplest form of slide rule, that is its capability?

A Multiplying and dividing. It doesn't add.

Q It does this by using marks on two pieces of wood mutually, which move relative to each other?

A Right.

Q Would you agree with me that that is an analog device?

A In which distance is proportional to number, the quantity.

Q Yes.

A Yes. To that extent -- excuse me -- the logarithm of the distance.

Q The logarithm of the distance. But in the context of what we are talking about, these sort of add distances, don't they?

A To multiply numbers?

Q To multiply numbers.

A That's correct.

Q You add the length of one piece of wood to the length of another piece of wood.

A That's correct.

Q And some scale tells you what your resultant answer is, doesn't it?

A That's correct.

Q Hasn't that been replaced by the pocket calculator today?

A For those that can afford it.

THE COURT: I remember the one I bought for \$49 several years ago, which I think now sells for about \$25.

THE WITNESS: Most of the students can.

THE COURT: It is like the transistor radio I bought when it first came out.

THE WITNESS: However, the calculator is much less reliable than the slide rule.

BY MR GOLDENBERG:

Q Let's put reliability aside for the moment. Can you agree with me that the calculator is a digital device?

A Of course.

Q And that can multiply and divide numbers?

A Of course.

Q It is interesting that you say the calculator is not as reliable as the slide rule. I have a calculator back at my desk, which I think is one of the \$9.95 jobs, and it can give me eight numbers in my answers. If I use decimals, it can give me an answer out to seven decimal places.

A It is more accurate.

Q I see. The pocket calculator is more accurate.

A Yes, but less reliable in terms of time between failure. If you knew the number of times I had to return by Hewlitt-Packard for a repair, you would know what I mean. No malfunction with the slide rule.

Q The only thing that can happen to the slide rule is that you might break it?

A Or lose the stick, right.

THE COURT: I kind of have lost the train of that. Did we agree that a calculator is an example of digital computing?

THE WITNESS: Correct.

MR. GOLDENBERG: Yes, your Honor.

BY MR. GOLDENBERG:

Q And the modern watch that we see now, so-called digital watch, that is a digital device also?

A It certainly is.

Q The analog version of that might be my old-fashioned time piece.

A That is only an analog display. It involves a digital to analog conversion.

Q As a matter of fact, you are quite right. It is an Acoutron, and there is an oscillator in there.

A So is mine.

Ribbens- cross

THE COURT: If adding distances to get a numerical result is what we mean by analog, what do we do in digital computation?

THE WITNESS: I think you may have been misled by this idea. I don't know.

Do you want to carry the idea further?

BY MR. GOLDENBERG:

Q No, sir. I think the Judge really wants your answer. He might hear from me, however.

MR. ANDERSON: I'm sorry. I didn't hear the Judge's question.

THE COURT: It probably wasn't even worth repeating. What I would like to know is the way the two methods of computation work, just in broad terms.

THE WITNESS: I think the first point is the difference between analog and digital.

In analog we have voltages which are continuous and which can take on a continuous range of values between the limits of the devices producing them.

In digital devides we typically operate with binary numbers, though there are other systems. But we are talking here about the simplest case.

In the digital system we tend to operate

by either counting or logical combinations of binary-valued voltages.

BY MR. GOLDENBERG:

Q But essentially counting is used in digital devices?

A That is one use of digital devices, yes.

Q I understand that. But in digital calculators, digital pocket watches.

A They use counting.

THE COURT: Counting, as opposed to measuring distances?

MR. GOLDENBERG: Correct.

THE COURT: Is that a very rough way of saying it?

THE WITNESS: I guess, yes.

THE COURT: Realizing that measuring would be form of counting also.

THE WITNESS: Yes. All right. So the end result would be a number, you mean.

Yes.

BY MR. GOLDENBERG:

Q My apologies, Dr. Ribbens, because you may have answered it, but there is no counting in either of the patents in suit, is there?

A That's correct.

Q There is counting in the defendants' devices, isn't there?

A That is correct.

When I make that answer, I mean with reference to the text and with reference to the figures.

Q The text of the patents in suit?

A Yes.

Q And with respect to the figures?

A That's right. There is nothing in the drawings, the schematic drawings, nor is there anything in the text, which specifically calls for a counting device.

Q At some point you began to prepare for your testimony in this case, didn't you?

A Yes.

Q Did anyone say to you that patent claims are construed in the light of patent disclosures as you began that preparation?

A What was that again?

Q That patent claims are construed in the light of patent disclosures.

Did anyone say that to you?

A I don't remember that specific statement, no.

Q Did anyone say anything that sounded like that?

Ribbens - cross

A I don't remember.

Q When you gave your understanding of the patent claims, did you pay any attention to the patent disclosure?

A Yes. I read them.

Q But did you let your reading and your understanding of what you learned in the text and in the drawings influence your understanding of what the claims were talking about?

A I think so.

Q I am sorry?

A I think so.

Q I would return again to claim 51 in the '507 patent, and exhibit --

A I'm sorry. I didn't hear the last part.

Q -- and Exhibit 91-A.

A That is Paddle Ball?

Q -- and the claim language that talks about means for generating a hit symbol.

A Yes.

Q Well, I see that is all the material outlined in orange, isn't it, on Exhibit 91-A?

A Correct.

Q And there is a 7474 in the upper part of the drawing, isn't there?

A Which part are you referring to?

Q I am referring to the upper part of the drawing.

A Okay. There is.

Q Is that a part of the means?

A For imparting distinct motion?

Q That is not a part of the means for generating the hit symbol.

A Yes, it is.

Q I'm sorry.

A Yes.

Q Oh, it is. And that is a 7474? That is a D-type flip-flop?

A That's correct.

Q And we have already agreed there is no D-type flip-flop in either of the patents in suit, haven't we?

A There is no D-type flip-flop appearing in any of the schematics.

Q Of the patents in suit?

A Of the patents in suit, that's correct.

Q And there is no reference to it in the descriptive text of the patents, is that correct?

A In the text, that is correct.

Q Perhaps we can have an understanding, sir, that when I put that question to you, it is in the context of the text and drawings of the patents. I am not talking about the claims right now.

A Fair enough.

Q Now we come down to the bottom of the drawing, and at the lower left-hand side I see three similar elements which have the number designation of 7450. What are they?

A Well, they are a combination of logic elements, including AND Gates and an OR Gate.

Q Is there anything like that in the patents in suit?

A No.

Q We are back to our 7474 friends, aren't we, if we continue over to the right?

A Yes. I see them.

Q All right, sir. The next big unit I see is a 7483. What is that?

A Well, there is a mistake on the drawing. There is a two-input exclusive OR that is labeled 7483, which couldn't be an 7483. I am not sure what you are referring to.

Q I moved over to the next element, the B4 element, which looks like a 7483 to me. Perhaps I can show you on the drawing, if I may.

A B4. Okay.

MR. ANDERSON: I understood "D".

MR. GOLDENBERG: If I said that, I misspoke.

THE WITNESS: I am not sure I heard either one, but I know what you are talking about now.

BY MR. GOLDENBERG:

Q Could you tell me what that unit is?

A A four-bit full adder.

Q I think we already agreed that there is no full adder in the patents either.

A Correct.

Q I continue on to the right and come to a 9316. Tell me what that is.

A It is a preset counter.

Q There is no preset counter in the patents, is there?

A Correct.

Q Perhaps I can do it this way: Could you tell me within the area that you have outlined in orange with respect to the means for generating a hit symbol what element or elements shown in this drawing, 91-A, are found in either of the patents in suit?

MR. ANDERSON: I object to the question as vague and ambiguous. You mean resistors and capacitors?

THE COURT: You are objecting to the word "element".

MR. ANDERSON: Yes. Or functionally?

MR. GOLDENBERG: I mean in terms of identity.

What element --

BY THE WITNESS:

A Well, there is certainly one. The potentiometers are clearly defined and determined vertical position.

BY MR. GOLDENBERG:

Q We are talking about the means for generating the hit symbol now.

A All right.

Q Is there a potentiometer there?

A No, not -- excuse me. You are talking about within the purple line?

THE COURT: Within the orange line.

BY MR. GOLDENBERG:

Q Within the orange line, Doctor.

A I thought you said "hitting symbol". I beg your pardon.

Well, there is a flip-flop, a J-K flip-flop, and certainly 107 calls for a flip-flop.

Q There is a flip-flop?

A Yes. The most significant digit.

Q Where is that flip-flop?

A G6B at the extreme right of the hit symbol.

Q Yes, the G6B flip-flop. What does that flip-flop do?

A Well, depending on how it is wired, it changes states. This is wired in such a way that every time it receives a clock input, it toggles.

Ribbens - cross

Q By "toggle" do you mean change state?

A Yes.

Q An output terminal changes from one level of voltage to another level of voltage?

A Correct.

Q Is that what you mean by toggle or change state?

A That's correct.

Q Well, okay, I understand that it changes state, but what does that -- what effect does that change of state have in this circuit?

A Well, I would have to go through the whole circuit to explain that. In other words, it --

Q I thought you had done that.

A No, I mean for you right now, to describe every functional element which would take a great deal of time. Is that what you want me to do?

Q Well, is there a shorthand way? Can you tell me --

A It provides one input to component 7420 for input NAND -- I can't read this drawing very well -- looks like pin 13 -- H6B component --

Q Well, all right, sir, perhaps I can put this question to you: Does that Flip-Flop do the same thing that the -- I'm sorry, let me back up.

Is there a Flip-Flop in the '507 patent in

the means for generating a hit symbol?

A I'm sorry, I just pointed one out -- oh, you are talking about --

Q The '507.

A -- the patent, I'm sorry.

Q Is there a Flip-Flop -- and let's have this understanding between us, that when I say "in that patent" --

A Yes, you mean the schematics or the text.

Q Correct.

A No.

Q Is there a Flip-Flop in that patent which is a part of the means for generating the hit symbol?

A In the schematics or the text, no.

Q Yes, sir.

A No.

Q No, so this Flip-Flop in this means here doesn't have anything to do with any other Flip-Flop which might be in the '507 patent?

A Well, I don't know if I would go that far to say it doesn't have anything to do with it.

Q Well, all right, sir, perhaps I did go too far, but, in any case, there is no Flip-Flop in the '507 patent?

A There is no Flip-Flop in the --

Q In the '507 patent in the means for generating

Ribbens - cross

a hit symbol?

A Okay, I will agree with that.

Q And would you agree also that there is no Flip-Flop in the '598 patent in the means for generating the hit symbol?

A I will agree with that.

THE COURT: This might be a good point to recess. It's a little after 4:30.

Dr. Ribbens, this is turning into a marathon for you.

THE WITNESS: I don't mind.

THE COURT: I had hoped that we would be a lot further along by this point than we are. Maybe I'm asking too many questions.

MR. GOLDENBERG: I don't think so, your Honor.

MR. ANDERSON: I might ask Mr. Goldenberg if he can estimate how much more time he will have with Dr. Ribbens so I can indicate to the Court when I think the plaintiff would be in a position to rest.

MR. GOLDENBERG: Let me be quite candid about that, that from the nature of the questions put to Dr. Ribbens which were conclusory, in my view, they put a burden upon me to see what, if any, foundation there exists for those conclusions.

Ribbens - cross

THE COURT: You didn't realize what an opening you were giving Mr. Goldenberg, did you?

MR. ANDERSON: No, your Honor, I did not.

MR. GOLDENBERG: I will attempt to keep it as short as I can, but --

THE COURT: No, I mean by your question.

MR. GOLDENBERG: Perhaps even his statement of a moment ago.

THE COURT: That's what I meant. A good lawyer is always working.

MR. ANDERSON: I'm sorry I asked!

THE COURT: Well, I certainly don't mean to cut anybody short, because I think both sides are asking relevant and good questions. I don't sense any time being wasted here by anybody.

But I certainly want to get this case finished by no later than Thursday next. Now, that's one day longer than I had originally intended.

What I have done is put over, at the request of counsel in the pollution case, I have put them over until the following Monday, but I have, in the meantime, scheduled something else for next Friday, so I hope we can continue with this and

conclude it in the first four days of next week.

To that end, I might work you a little longer.

MR. GOLDENBERG: That would be fine, your Honor.

THE COURT: A little longer hours, and I suggest that we reconvene here at 9:30 on Monday, instead of at 10:00 o'clock, and we will get a little earlier start.

MR. ANDERSON: That will be fine, your Honor.

THE COURT: All right, have a good week-end, everybody, and Happy New Year.

MR. GOLDENBERG: Thank you, your Honor, and the same to you.

MR. ANDERSON: Happy New Year.

(Whereupon an adjournment was taken herein to Monday, January 3, 1977, at the hour of 9:30 a.m.)